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AVIATION

The Oldest American Aeronautical Magazine

IN TWO SECTIONS

Section One



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An Interview with Harry F. Guggenheim

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Keywords: *depression, mood, anxiety, self-esteem, self-efficacy, self-esteem, self-efficacy*

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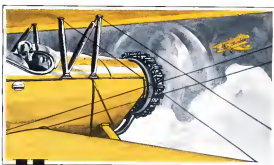
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Facts about the radio telephone receiver

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THE ship that won the Fifth National Air Tour was a stock 3-place, open cockpit WACO "2237" straight-wing. So was the second-place ship. Both were taken from the assembly line and given the customary factory flight tests. Only a score bulletin in the air preceded their entry in the Tour.

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4 4/10 seconds . . . with full Dept. of Commerce A.T.C. loading, 2500 lbs. Its average top speed was 135.44 m.p.h. four times over a measured course. Just 65% of this speed, or 112.12 m.p.h., would rate a perfect score. Actually, WACO averaged 129.97 miles per hour for the 5,017 miles of the Tour.

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AVIATION

THE OLDEST AMERICAN AERONAUTICAL MAGAZINE

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EDWARD F. WARNER, Editor

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Where Do We Sell Next?

WHILA Doctor Eckauer was in the United States last summer, at the conclusion of his world-circling flight, he was called upon to respond at a luncheon in his honor in Cleveland. "We have heard," remarked the Doctor in opening, "many fine words about our flight. I have been called a great hero," he said in substance, "and I have also been told that I am a pioneer of commercial steady transportation. Either one might perhaps be true, but both could not. If it takes a hero to fly, in an steady there could be no commercial operation, for the supply of heroes is too limited."

Those who are engaged in selling airplanes in the public for personal use will do well to bear that quaint observation in mind. It has a great bearing upon the orientation of their efforts.

An exponent of the precarious business of flying at twenty hours completed, some eighteen years ago, that flying was becoming commonplace and that the edge was wearing off the game. He knew, it became the character-marks of the lands where he got up had stopped reaching his pajamas for adventures. Not until the coming of Lindbergh was public interest again expressed in that precise fashion. It was a good sign for the future of aviation as a business, when the crowd ceased to view the pilots as neophytes, residing upon earth for a brief period for the sole purpose of making the hours of some casual ride into their throats. They have come to recognize them as ordinary human beings who eat three meals a day and play golf and poker and smoke the same brand of cigarettes that they do themselves, but then, still think of them and of the airplane owners as belonging to a group set aside by a common and somewhat abnormal interest. The dispelling of that impression from the public mind is the next hurdle that we have to clear in promoting the airplane and its use.

There is a substantial and a steadily growing number

of private owners of aircraft in the United States, but as yet they have been drawn almost entirely from among the aviation enthusiasts—the people who love to fly. There are not enough in that class to permit of real mass production. The task, upon which sales departments have now to focus their attention is the selling of planes to individuals or groups of corporation officials who are perfectly indifferent to flying as such, but who do want a service which only the airplane can give.

Compare the automobile. For once the analogy between the two industries is almost perfect. The first highway vehicles were sold and sold in very small numbers to mechanical enthusiasts who liked to fiddle with their machinery, to those professionally interested in transportation who wanted to see for themselves what the novelties amounted to, and to people who had, either by intuition or in spite of themselves, become indirectly involved in the promotion of the new industry. Mass production and mass selling became possibilities only when the idea of using motor cars had been accepted by a great number of individuals who had no desire even to get their hands dirty on the construction and who cared only about the results obtained not at all about the mechanical means adopted in securing them. To bring them into the field various things were necessary, especially an energetic selling campaign and the development of a network of repair shops and highway service organizations that made motoring trouble-free by enabling the motorist to pass his troubles on to someone else. Automobile owners ceased to be a group set aside in the community nor simply because their numbers had increased, but because they no longer had an absorbing common interest and a common specialized vocabulary.

The airplane will take a substantial time to pass

through the corresponding tradition and so the machine the enthusiasts are the backbone of the market, a support that must be held firm and undisturbed to the last. It is the example of intelligent use of the airplane which does, or may do, things are setting that will lead others to follow in their footsteps. For the great future a nation must be developed among persons who care nothing about governmental air force policy, except as any intelligent taxpayer may, and less than anything about the solution of airbombs or the refinements of structural analysis.

It is not upon third or upon scientific appeal that they are to be held but solely upon the saving of time and trouble in going from here to there.

//

Canada Strikes Out on Her Own

ALMOST simultaneously with the formal acceptance of an agreement to supply flying across our northern border and to induce governmental interference with aerial operations there is an indispensable condition, there comes a report to the formation of a Canadian Aeronautical Chamber of Commerce under a different name. The Canadian Association of Aeronautical Engineers, like the Chamber of Commerce here, represents a conviction that the aircraft industry has become too complex and its collective interests too large, to be left to the whims of chance or to an occasional and casual cooperation by agreement between individual firms.

It is natural that our neighbors in the Dominion should cross their own industrial organs especially for better collective dealing with their own government. Their industrial problems and their methods of operation have differed in many respects from those corresponding to the United States and in developing new practical arrangements for aircraft Canadian operators, under the lead of the Department of National Defense and particularly of Mr. J. A. Wilson and his staff here, have been among the world's leaders. The attitude toward industry in Canada is sharply different from that displayed in Washington, as the actions of government themselves are different.

Nevertheless the compelling force of geography and of a century of history of possible and actually possible association will not be denied. Industry uncoordinated policies. Without the need as with for political association or alliance, the people of the United States and those of Canada have been irresistibly drawn together. This of kind, of personal friendships immemorial, and of business relations have reinforced the natural results of contact along an open and non-strategic border three thousand miles long.

Canadian and American industry are largely under common guidance, representing an industrial and a co-operation of the best talents of both nations. No advance can be made on either side of the border without its favorable effects being promptly felt on the other. No where else in the world will two sovereign states be bound so closely bound together. No where else, despite the differences in our laws and despite tariffs, can inter-national flying be carried on so with little fuss. Mr. Wilson and Secretaries MacCracken and Young have started out with a willingness to recognize each other's problems and a determination to agree, and they have done so.

There could be nothing gained by a narrow separation. We shall both travel farther and faster if, without sacrificing our independence we travel together. The Canadian Association and the Aeronautical Chamber of Commerce ought to work hand in glove with each other. There is a common interest which we of Aviation are glad to recognize and to defend. Some months ago we ceased to treat Canadian news as "foreign" and began to handle it on a common basis with that of activities in the United States. We call upon our readers in the Dominion, of whom we are proud to have many as well as upon readers and industrial organizations below the border to work for not only a common but an extension of that co-operation that has already borne well good fruit in commerce and in other industries. As we shall best exceed the manufacture and use of aircraft upon the North American continent.

//

Unmaking Air-Mindedness

THE AMERICAN PEOPLE have started with a strong predisposition in favor of aviation. Even those who make no direct use of the airplane and entertain no plans for doing so are eager that air transport should progress. Where the friendly air has chilled, and where hostility to the airplane and all its works has taken its place, some definite reason has existed. Wherever there is opposition to the opening of airports, such as has unfortunately shown itself in several communities, or to continued free operation from fields already in service, there is cause for us to search our own souls. We may create hostility through our own ignorance. We may breed antagonism in our neighbors through our own care less, careless or malicious acts.

The problem of noise has long been acute. No doubt we shall become accustomed to the sound of the distant passing airplane and indifferent to it precisely, as the cattle of India care and the careless dancings of trucks through the streets before our urban houses has ceased to disturb one slumberer. We are not, however, to that

with confidence. But there are some circumstances under which the sound of the present-day airplane can hardly be ignored.

It forces itself upon the attention of the immediate neighbors of an airport, but airports are commonly in areas either thinly settled or given over to industrial purposes.

It is a such case serious matter when pilots begin deliberately to fly at a height of a few hundred feet over residential districts. Two years ago complaints on that score were scarce as they always should be. Now they roll in with alarming frequency. Upon Long Island, along the Lake front north of Chicago and in the most attractive suburbs of other cities persistent and unnecessary low flying is becoming a curse—and many who should be friends of aviation are being turned into enemies in consequence.

It is not merely the noise that is objectionable. The insertion of aircraft, when sight-seeing planes cruise repeatedly just a scattered house only just above the tree tops, or even pass to circle about the house, furnishes an equally real grievance. No one has the right to trespass abundantly in the way of the development of air transport for the general good, and none should have the right to take measures of his own which will reduce the benefits of air navigation, but subject to those limitations the ground-owners, including the possessors of country estates, are entitled to be protected in their peace and seclusion.

The Department of Commerce rules are often flagrantly violated. The evil would be largely ameliorated if all forty-eight states would enact legislation giving the Air Traffic Rules the force of state law and then properly instruct the local authorities upon their powers, to arrest in the event of violation. But that would not be quite enough.

The rules need some broadening. It should be made explicitly clear, for example, that the mere fact that a landing plane is always within reach does not excuse the operator of a seaplane from maintaining a reasonable altitude when flying over the shore. It is not only the safety of the occupants of the plane that has to be considered. Except when taking off or landing or when weather compels it, and of course excluding certain essential purposes, no plane ought ever to be below eight hundred feet when over inhabited land or less than half a mile off-shore.

No rules, however, can be made to make them fool-proof, nor stand alone. The real remedy for the annoyance of public distress lies in the suppression of individual selfishness. The aeronautical industry has no appreciation for those who bring things into dispute by making themselves conscious nuisances. Serious workmen in the aeronautical field should make it their business first to warn the pilot who has allowed himself to get into that class, then when indifference or neglect makes it respectably necessary, to take the initiative

in bringing him before the law. One of the most important of the presently controlled flying fields in the east recently issued a "vigilance committee" of pilots who undertook to do just that. We dislike the idea of asking anyone to be on the watch for his neighbor's delinquencies, or to caution himself his brother's keeper, but the misapprehension of failure to supervise are still more unpleasant to contemplate. We have an interest in protest, the importance of which far exceeds our consideration for any one live and careless individual.

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Instinct or Instrument?

AT THE CLOSE of the War it was almost possible to start an argument in a group of pilots over the desirability of printing air speed meters and other flight instruments either on service or training planes. The sentiment that no good pilot ever wanted an instrument except tachometer, altimeter, and compass was frequently heard. Those who had learned to depend on instinct themselves realized that that anyone should propose to substitute a mechanism for their delicately developed sense.

No one now denies the desirability of putting flight instruments on service and transport planes. It has been so often demonstrated that blind flying is impossible without their aid, but the difference of opinion over their use on training machines and over the desirability of coming to depend upon them in clear weather continues to strong as ever.

The question is one upon which only experience can render a verdict. It cannot be settled in an editorial, but it merits investigation and settlement. Now that flying schools are being organized on so large a scale and have the most competent management, allied with research organizations, there is an opportunity to study such matters without permitting the individual or collective prejudices of instructors to affect the decision. Admittedly most pilots have been trained without any reference to air speed meters in their first steps. Admittedly again, there are some very possible private pilots who learn up their flying completely and never get into trouble, who always keep an eye on their air speed meters and have always done so. One of the best known of British pilots, instead of having a broad red line painted upon the dial of the meter at a speed five miles above the calculated maximum velocity of every machine that he flies. Is it a good rule? If not a good rule for everybody it is a good one for the student operating a light plane? How far can instinct and "the feel of the air" be depended upon? These are questions which our most prominent flying schools should co-operate in answering.



Harry F. Guggenheim, president of the Guggenheim Fund for the Promotion of Aeronautics

A REVIEW OF Aviation Accomplishments

The President of the Guggenheim Fund Surveys Three Years of Progress

An Interview with Harry F. Guggenheim

By FRANK L. CURTIS

HARRY F. GUGGENHEIM, former travel writer and the first licensed pilot to become an American Ambassador, believes commercial aviation has achieved its infant industry stage and is now taking its rightful place as a vitally important social and economic development. If he did not think so, he declared a few days ago, he would not have accepted the appointment as Ambassador to Cuba, but would have remained here to help promote aviation as head of the Donald Guggenheim Fund for the Promotion of Aeronautics.

The Fund is now swelling up its affairs because the Trustees believe it has accomplished its purpose of "promoting aeronautical education throughout the country, assisting in the extension of aeronautical science, and furthering the development of commercial aircraft, particularly air transportation."

In an interview on the eve of his departure to take up his new duties, Mr. Guggenheim expressed his opinion as to what has been accomplished thus far and what we may expect to see in the next few years.

"A new industry has been established vital to the economic progress of the United States," he said. "There is every reason to believe that aviation is going through the same stages of development that the automobile industry went through. The airplane is the logical second step to the automobile."

"Two fundamental barriers to aeronautical progress have been overcome—one natural and one artificial. They are, first, flying and the solution to certain aerodynamic problems. With aircraft so safe anyone can fly and fog no longer a menace. I believe plans will be built, and will flow, not by thousands, but by hundreds of thousands."

"Some day—and it is not so far away that we won't all live to see it—flying will be as much a part of our every day lives as driving an automobile is today. Airplanes will travel independent of weather conditions. Of course, I do not mean that we will fly through hurricanes, but ships at sea and even automobiles do not do that."

"When the Guggenheim Fund safe airplane contest is

over, I think we will have had an actual demonstration that nonaerodynamic safety can be achieved. If that is true nothing can prevent mass production of airplanes and mass production means airplanes for the masses."

"Since the Wright Brothers' first plane, there has been a tremendous improvement in aircraft engines and accessories, but only recently has there been any fundamental improvement in aerodynamics."

"During the war period improvements in safety were a secondary consideration in aircraft construction. After the war came the fly-down, and aircraft manufacturers struggled to keep their heads above water. The change has come in the last year or two, and the Guggenheim Fund has tried to help point the way to this improvement."

"I shall be sorry to give up the work. It has been a wonderful experience. I don't know of anything I have ever done that I enjoyed more."

FOR ALMOST FOUR YEARS Mr. Guggenheim has given the best part of his time and thought to the Guggenheim Fund. When the books are finally closed \$5,000,000 will have been spent in the cause of flying. Since January, 1925, when the Fund was established, commercial aviation in this country has seen three distinct stages.

The first might be called the awakening, symbolized by Lindbergh's flight to Paris. In his report as president of the Fund for 1925 and 1927 Mr. Guggenheim said:

"In the last part of 1925 and throughout 1927 a series of spectacular flights has occurred. We have flown to the North Pole, we have flown across the Atlantic and half-way across the Pacific; we have flown at a speed of over 200 mph and have remained in the air for over 51 hours at a time. The wildest dreams of the aviator have been accomplished and through the efforts of Col. Charles A. Lindbergh aviation has become a common topic of conversation in the households of America."

"To the spectator there is nothing more to be desired. We now face a task of a less dramatic, equally exciting sort—the task of the builder who follows the

printer and gives practical effect to his egoisms. A second period in aviation is beginning, the period of its public utility, when the once uncommon airplane becomes a 'mass-carrier'."

A year later, in his 1928 report, Mr. Guggenheim said:

"Probably the outstanding aeronautical achievement of 1928 was the demonstration in America by private enterprise that air transport can be made a profitable business without government subsidy. The American pioneer aerial contractors, by their courage and business ability, have opened the world by the quick and convincing demonstration. Air transportation services have been extended to number and route, output of aircraft has enormously increased, and for the moment legs for behind the demand, and scientific research is approaching a solution of the few remaining aeronautical problems."

In his last report he said:

"In the past three years the public attitude toward aviation has changed from indifference to intense enthusiasm. Not only is there a sound commercial basis for aviation, so that it can now not only take care of itself, but there have been established at various geographical sections of the country aeronautical engineering and research centers, which are second to none in the world."

"These centers, connected with great universities as an adjunct of a continuous contribution to the new science of aeronautics. With governmental aviation assured of public support and aeronautical science equally assured of continued research, the further development of aviation in this country can best be fulfilled in the typically American manner of private business enterprise."

DISCUSSING the possibilities of this development, Mr. Guggenheim predicted that commercial transport planes will soon be flying across the continent at a speed of 200 m.p.h.

"That is a perfectly reasonable figure," he said. "We

already have experimental planes that can cruise at 180 m.p.h. When we have reasonable landing gears and other features to reduce air resistance, 200 m.p.h. is not too much to expect."

"Greater speed will introduce an entirely new economics of aviation. Down to disk flights with passengers between New York and San Francisco or Los Angeles will become a daily routine. Distances, which have already been twice that cut in half, will be cut in half again."

"I believe the time is not far away when we will be flying from New York to Santiago, Chile, in 25 hours."

The future of transoceanic air transport, Mr. Guggenheim believes, depends upon improved airplane efficiency or the predictable development of refueling bases at sea such as the seaplane now being built to serve as a half-way station between New York and Bermuda.

At present flying across either the Atlantic or Pacific seems to be a heavy-lift load, a remarkably unusual, because of the heavy fuel load. Druggies may solve the problem he thinks. One of the last acts of the Guggenheim Fund was the establishment of an airship institute at Akron, Ohio, to aid in lighter-than-air development.

He sees a great future for airplane transportation between North and South America, however. It is an address last summer before the Institute of Politics at Williamsburg, Mass. he sketched a table of travel time between Washington and the capitals of Latin America on the basis of continuous flights at 200 m.p.h.

Between Washington and Havana, for instance, the present rail and steamship journey requires 42 hours; in a 200 m.p.h. plane it could be accomplished in less than eight hours he pointed out.

Mr. Guggenheim's trip between Washington and Havana on Ambassador may not be made at the rate of 200 m.p.h., but he intends to fly whenever he can.

"I am going to take one plane with me to Cuba—possibly two. If I can save time and if it is convenient, I will always fly in preference to taking a train or a boat," he said.

definitely would make changes to test a superiority of the intended manufacturers. Briefly, the Committee holds that the National Air Tour is the industry's own and is not designed to give advantage to any one manufacturer's plane, or any one type of plane. During the past five years, the Committee believes, the Tour has been at least partly responsible for some very constructive steps toward safety, more reliable, and more efficient airplanes. And it sees no reason why that work cannot and should not be continued.

NO PERSON is better qualified to point out the shortcomings of the Tour formula and of the Tour rules than the pilot who has competed in the class, or the man who has set or seen official capacity in the event. This recent National Air Tour included in its personnel a number of men whose symposium of those important phases of the Tour were well worth listening to. All those men, be it understood, were not competing pilots. Some of these were not pilots at all, but were officials of the event. Some were pilots who were competing in the Tour for the actual time, but whose background was such as to make their views interesting. Others were men who had competed in the Ford Ford Tour before and were well acquainted with the various problems facing the National Air Tour contest.

Through the full-hearted cooperation of Captain Calhoun and Capt. Frank M. Hawkins, Official Tour Referee, the speaker was enabled to see and to hear the views of the last stages of the recent Tour at which the views of such men present was recorded. From this meeting a fair cross-section of what the air tour needs in the way of change was gained.

John H. Livingston, the 1929 Tour victor, had no recommendation to make relative to the stick and auster factor in the formula, but stated that he thought "there should be two or three classes of planes competing separately in the Tour."

"Especially," he said, "should there be a light class and a heavy class, although the present formula means that the planes go pretty well." I think, though, that the penalty for arriving late at a control point should be increased."

Mr. Livingston, who has been a contestant in the Tour before, had shown victory this year over a Cessna Aerobat. He pointed out that the design of the aircraft and the advances in design had been such during the past year that the plane used by the late Maj. John P. Wood in winning the National Air Tour last year would have had difficulty placing in tenth this year.

It is through his own efforts to break the views of Arthur G. Schleuser, official scorer on the Tour for the past two years, deserve a great deal of attention. Mr. Schleuser, an accomplished engineer and halfhearted international reputation, is a member of the engineering staff of the Detroit Aircraft Corporation, and is credited with much of the engineering work on the Navy's all-metal dirigible, ZMC-2.

"The ideal formula," Mr. Schleuser stated, "would dispense the place carrying the greatest load the fastest at the least expense. I would mean the appearance of stick and auster in the formula, or eliminate it entirely. Perhaps it would be better to use the ratio of the square root of the area of the stick, plus the auster, than divide it into the load multiplied by the speed. That would give the larger plane with the lower loading and take-off capacity a more equitable advantage and do much toward preventing the plane with low horse-power, less carrying

capacity and less speed from running away with the Tour because it can load and take off within a few seconds. More, larger and better airports all over the country have reduced the importance of landing places that will load and take off in a very short space.

"I believe that the ratio's actual speed should be used in arriving at its points for a tie, rather than permitting the plane to maintain only 85 per cent of its maximum speed shown in the pre-Tour tests. What we are trying to do is to demonstrate the safety, reliability, speed, economy, and comfort of air travel. Yet we must have a contest. There must be some difference in the day-by-day scores during the progress of the Tour or the manufacturers will lose interest.

"Since formula should be designed to take in fact consideration but these seems to be as practical way to do this. I think that consideration should be used in the formula instead of engine displacement. Another type of engine we soon will have to consider is the application of a plane on fly either water or land area recognition should be made of that fact either in the formula or the rules. Some credit should be allowed for an entry's ability to change its passengers in the air."

"Aside from its technical aspects there also is a need for more advancement on the Tour. Carefully planned and skillfully carried out showmanship never hurt anybody. Conversely, it does nothing but hurt the average of a lot of things. It is one thing to let the Tour should carry about its own official publicity. This spokesman should be a man who, not only is qualified to talk on the subject of air travel, but a man who can deliver an interest-holding address."

CHARLES W. MYERS, chief test pilot for Great Lakes Aircraft Corporation, Cleveland, who has competed in the Tour more than any other man, favors the taking of stick and auster figures at each control point on the theory that it "would prove the pilot and the plane under general flight conditions."

Mr. Myers said, "that this would mean a lot of work, but it would be worth-while. We could send our own men around the route in two- or three-placed, one-place land planes in advance to check the contestants' loadings and air remaining behind to time the take-offs. Since this work is already being done by the various factories—particularly from the engineering department. This method would give the contestants a different figure of merit for each leg and would prove both the pilot and the plane under the general conditions of cross country flying."

"I also believe that the comparison of a plane's actual speed should be taken into consideration in the formula. If this was done it would prove the pilot's ability to navigate. As the formula is now, no one contestant has a chance to gain on the man ahead of him, even his figure of merit is larger or, unless the pilot ahead of him starts with engine trouble or a mishap. If changing a man up with his actual speed and be checking each one of his landings and departures much of that state of affairs would be eliminated."

"Since this is a manufacturer's event, the manufacturers should be permitted to make their own formula plans. The Tour, in fact, should be a sort of proving grounds for new planes. It should serve the two-fold purpose of exhibiting the manufacturers' new and experimental type planes to the public, and at the same time demonstrating it to its builders. I believe that the Tour's principle benefit is educational, rather than sales promotion. And much

of that educational work is contained in the facts about his own plane learned by the manufacturer during the Tour.

"Although I do not believe that demonstrations of the plane with a new towed device are necessary, I would suggest that the two jumps now being made daily over the Tour route. One leg per day is plenty. I would suggest a rule prohibiting pilots to change their propeller settings after leaving a run through the stick, auster and speed tests, this rule to prevail so long as those tests are made; one, and for all in Ford Airport before the Tour starts.

In order to encourage competition in the light plane class we should that Great Lakes Aircraft Corporation last week announced a Great Lakes Light Plane trophy to be awarded annually to the National Air Tour trophy to the owner of a 110 max. displacement, or less, plane with an engine of 110 max. displacement, or less, and scoring the highest average Tour crash or on class.

The Tour committees should make some allowance for the pilot who loses time on one leg and makes it up on the next, in the opinion of C. G. Andrews of the United States Weather Bureau, who has officiated for the last two years as the Tour's official "weather man." Mr. Andrews, for one thing, has shown of considerable reputation, but for the past several years been showing his full time to planning and distributing astronomical meteorological information at Hedy Field, N. J., and more recently at Cleveland Airport. Such man should be heard by the Tour's officials. "Another one of the formula is wrong. Actual speed should be used. That would stimulate better planning and better navigation, particularly with regard to the fullest utilization of weather conditions. The Tour also could help to encourage increased training of pilots in the use of the weather by helping them by making the legs longer."

"Like out the stick and the auster," is also the suggestion of R. W. (Dick) Pease, who has competed in the Tour for the past two years flying Painted planes. Mr. Pease also agreed with others that actual speed should be used instead of the 85 per cent rule. "Actual speed," he asserted, "is what will stop the changing of propeller settings. I also would suggest compelling the planes to carry their respective gross load. So long as planes are advertised to carry a given load what is the sense in having them go around the route without carrying a percentage of that load." (Following stick, auster, and speed tests at Ford Airport, National Air Tour contestants are permitted to reduce their Department of Commerce allowable useful load to 75% of this figure.) "We are supposed to be demonstrating to the public what a plane is capable of doing, and if we take away its load, I think the Tour supporters should be lengthened for educational reasons."

ALFRED of the 85 per cent rule that no radical changes are needed in the formula. Captain Hawkins, Tour Referee, as an experienced advocate of Mr. Schleuser's suggestion that either the square or cube root of stick plus auster be used, Captain Hawkins also would lengthen the legs, use actual speed, and "make the Tour more like a real race."

"There also is an need for any radical revision of the scoring system," Captain Hawkins asserted, "but something should be changed to make the Tour of more interest to the pilot, to the manufacturer and to the public. Just now it is cut and dried, and practically settled before the planes ever leave Ford Airport. Some pep should be injected into it. I would suggest making it more like a

real race, when the same pilot would get in the lead all of the way around. I am in favor of using the plane's actual speed, and of using either the square root or the cube root of the sum of stick plus auster. I also would like to see the leg lengths lengthened somewhat.

"The National Air Tour," said Roger D. Williams, trans-sonic flyer, who accompanied the recent classic flying a Columbia Triad until one of Captain Calhoun's neighbors, "gives people a chance to see a real flying auster show. I would suggest making the route to the smaller airports. There seems to be more interest in the smaller towns. Next year there will be emphasis in the Tour, and some provision should be made for those in the rules. Amphibians will prove greatly interesting to those in small cities because they are so few of them. Fuel consumption it seems to me, is much more important than stick and auster. I also favor longer legs and longer stops."

ALFRED Buelton Wagner, pilot of the Warp powered Stearman 95 is last year's Tour victor, but never before competed in the event. His views should be of great value because of his abundant experience in flying the mail. After all a considerable percentage of any success realized in flying the Tour is due to sheer plating ability—the ability to remain on one's course, take the best possible advantage of the weather under one's course, and arrive at a control point within the set time, on the average margin of a minute or more in time will show. And no pilot should be more qualified to do that than still holds the victim air and passenger life there. "My only suggestion," said Mr. Wagner, "is that actual speed be used in the scoring, and that a heavy penalty be created for engine failure. Such a rule would insure care of the engine. Pilots would get the best speeds out of their planes without playing their power-plans."

Dale (Red) Jackson of no-fairing endurance flight fame, who piloted a Wright 225 engine Cessna Triad, agreed with a number of the others that actual speed should be used instead of the 85 per cent rule. "Actual speed," he asserted, "is what will stop the changing of propeller settings should remain constant, and that the legs should be lengthened. Mr. Jackson, however, disagreed of the rule allowing a contestant only two hours to work upon his plane.

Referring to increasing the leg mileage Jackson said he believed the legs should be lengthened to at least 300 miles and that the afternoon leg should begin at 1 p.m. in order to allow the contestants time to arrive at their destination and demonstrate their planes. "Should they be allowed to do so?"

William Williams, who flew a 5-cyl. Wright powered Sparrow, a craft never before entered in the Tour, was of the belief that the "stick and auster factor should be changed but not eliminated entirely." Using the square root of the sum, he believed, would be very considerable. Mr. Williams also suggested that organic could be permitted in accordance with the regular difficulty encountered.

Steve Lacey, pilot of one of the Tour's three Cessna outfits, strongly favored the adoption of the square root of stick plus auster rule, and advocated as well the using of actual speed.

George W. Haskins, who this year was no newcomer to the field of National Air Tour pilots, expressed himself as favoring the classification of Tour entries. In both the 1928 and the 1929 Tours Captain Haskins has piloted a Bellanca amphibian.

Standardization of SMALL ENGINE PARTS

By JOHN F. HARDECKER
Chief Draftsman, Vought Aircraft Factory



Standardize to pin between auto

MODERN industry holds no parallel more convincing than that between aeronautical achievement and the development of the aircraft power plant, an assemblage primarily by the aircraft engine. As goes the engine, so goes the plane, and all the tremendous contingent organization representing a great industry. So in a major development as great and significant as the modern aircraft engine, it is perhaps usual to find each engine manufacturing organization presenting an almost exclusive concentration upon fundamental principles, technical essentials and immediate production. Small makers must give way to the drive for the big idea, for there is literally no time available for retrospection and critical analysis of minor economies.

Yet, somewhere along the line of march of progress toward the ultimate objectives of any industry, time and opportunity must always be provided for a few, who, without halting the forward movement of the main body, plan for basic cooperative economies that will simplify and reduce the work of the major firms. Standardization, in its broadest aspects, is one of these basic cooperative economies. Standardization, from a purely theoretical conception, is most easily introduced at the inception of an industry, yet from a practical viewpoint, it is necessary that the industry reach a reasonable degree of stability before such work is best attempted. The airplane building industry, as distinguished from the aircraft engine industry, found its expression in thorough standardization of small parts many years ago, so that it is now so well established as a vital part of plane manufacture, that few can even recall its humble beginnings.

It is economic of standardization activity, that once properly initiated in an industry, it automatically gains momentum and volume so that in a short time it becomes necessary to restrain rather than to foster the widely enthusiastic unanimity of its recent proponents. That standardization of small engine parts commonly called engine hardware, is inevitable is a generally accepted fact, the debatable point being only as to the time in the history of power plant development most favorable for its introduction.

Introduced too early in an industry's development, standardization either leads to a hasty degree to retard development, or by its very failure to protect fundamental truths, defers itself and falls into bed with defeat. It is too late, so that individual innovative designs become permanently established and there are no new

Many industries have found standardization work the key-note to economical production, distribution, and servicing. The aircraft industry is just beginning to recognize its importance, and to co-operate heartily in promoting the adoption of new standards where feasible. Mr. Hardecker points out that the standards for minor parts has seriously lagged in the engine field. As a means of promoting the standardization work in which he is actively engaged, and in which the entire industry should be extremely interested, it is suggested that all those having suggestions for particular standardization projects within the field covered by this article, or who have data that they think should be taken into account in framing standards send them to Mr. Hardecker in care of AVIATION.

models in which it may be economically applied, for standardization activity should never be retrospective, it again lacks the proper stimulus for success. Therefore, there is a particularly proper time for the introduction of standardization activity, and to analyze the current situation with respect to small engine parts, in the belief that the present is that time, is the primary purpose of this article.

Fortunately, the machinery of standardization has already been introduced into the aeronautical engine field by the activity of the Society of Automotive Engineers and the Army-Navy Standard Conferences in their work in strengthening installation and interchangeability dimensions for turbine power plant accessories essential to the aircraft engine. In considering small engine parts,

however, the investigation must go far deeper for it is unfortunate that at the present time many of these small engine parts are interchangeable as far as substitution synonymy of one for the other is concerned, though they differ radically in strength and utility. Therefore, small engine parts standardization must go all the way, and completely define a part, similar to that now in universal use for structural aircraft bolts, nuts, washers, etc.

IT MAY BE WELL, at this point, in order to avoid confusion to define in a general way just what is included in the term aircraft engine hardware. This is applied to those small parts used in engines and engine accessories which fulfill a general function, and which may be used under ordinary circumstances wherever that function occurs. Specifically these small engine parts include all types of bolts, nuts, screws, studs, washers, gaskets, keys, pins, lock rings, etc., used on all types of engines, generators, starters, carburetors, magneto, fuel pumps, etc.

At the present time each engine or accessory manu-

facturer prepares independent detail drawings of such parts, assigning his own part numbers to them. In many cases the same identical small part receives a new part number of a given engine manufacturer each time it is redesigned as a component part of a set of engine plans for a new model. In other cases, while each small part is individually detailed for each engine assembly, the final drawings showing the range of sizes of a given detail design are not publicly available and when maintained for private use, show no consistency or relationship in the assignment of part numbers for tabulated variations. In at least one case, airplane part numbers are withheld for the identical small part to the two component divisions, engines and planes, of a single aeronautical corporation.

The situation outlined with respect to part numbering is not presented in a spirit of criticism, but merely to indicate an existing condition, fostered by circumstances peculiar to the rapid expansion of the aeronautical engine industry. Bearing in mind that the condition outlined is in no way dependent upon technical differences, either intentional or accidental, but is basic, and applies

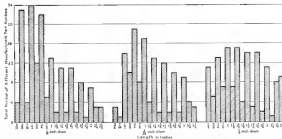


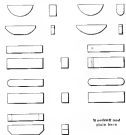
Diagram showing number of different part numbers ordered in each size of 1000 pins

literally represent "scorches of bark," easily countable by proper standardization. The multiplicity of design information incorporated in existing designs critically provides a proper basis for standardization analysis, and well indicates that the present is an extremely proper time to initiate this activity, which is best defined as "common sense applied to creative individualism for the purpose of achieving the greatest good for all."

The foregoing, while it may leave an impression of a rather chaotic condition in the small parts field in aircraft engine design, may still have that feeling accompanied by the thought that while this appears highly depressing from a theoretical viewpoint, it has nevertheless, not been a serious detriment to the attainment of efficient engine design. Therefore, since the proposed small parts standardization is a new endeavor, it may be felt that it will be surrounded by inherent handicaps to production that may well offset its "logical" advantages. In opposition to this thought, it may be well to reiterate certain general advantages of standardization already established, in terms of the subject to hand.

It permits the engine manufacturer to manufacture or purchase small engine parts on a mass production basis, thus reducing costs.

It concentrates on a lower number of sizes and types.



thus increasing improvements in production methods that will ultimately reduce waste and costs.

It encourages wider cooperation between specialized small parts manufacturers through a standardized product.

It permits the parts manufacturer to accumulate stock, thus reducing the inventory necessary for the engine manufacturer to carry.

It reduces drafting work on designs as standard parts may always be referred to by part number.

It facilitates the interchange of parts on engines manufactured by different manufacturers, reducing the stock necessary to be carried by jobbers, airplane operators and supply bases. Any lack of profit to the engine manufacturer gained through the supplying of machine worn parts direct will be more than offset by the re-

duction of initial cost and the elimination of assurance business entering in small orders.

It facilitates replacement and emergency repair by making parts more readily recoverable from the nearest public or commercial airplane supply depot or from the engine manufacturer alone.

It condenses and simplifies all design data, and encourages the retention of charts, tables, etc. in finished design.

It makes available commercially the best possible technical material, usually at a cost less than that of the poorer grades indiscriminately used.

It eliminates the menace to safety now possible by careless interchange of parts from different engine areas.

It permits of simple dissemination of dimensions with part numbers in tabulations (i.e., dash numbers corresponding to lengths in eighths of an inch) that make part numbers easily identifiable by constant men without direct reference to blueprints.

GRATEFUL as the advantages of standardization appear and really are, it is necessary to incorporate a word of caution. For standardization after all is not a magical process without necessary considerations and the need of time for its results to materialize. It does to a certain extent require some work during the period of transition, and a reasonable attitude must be shown during this period. Nevertheless, though it may be, the opposition advanced against the standardization of small engine parts is one instance, based on the fact that of the current AN standard type of part number were used, it would result in a number too long for the increasing forms being used, does not seem justifiable in terms of the obviously greater advantages.

Standardization, since it should never be restrictive, usually lags several years behind its adoption in its universal application in an industry. It also requires whole hearted cooperation, and those entrusted with the policy of an organization and who are designated to represent it at a Standards Conference should always approach the problem with an open mind, seeking the best general solution, and not merely an advance selling their company's particular small parts, because this might give them the maximum of advantage with the minimum of change disadvantage.

This problem of small engine part standardization is now before the Army-Navy Standards Conference, with the cooperation of the Society of Automotive Engineers (SAE). The procedure is to make a complete detail analysis of existing designs for a given small engine part, and from this basis prepare a tentative design which last appears to satisfy the predominant requirements. After this tentative design has been approved by a preliminary conference, it is submitted to the industry in advance of a general Army-Navy Conference in which all commercial engine manufacturers are invited. Then the tentative standard is open to discussion before final adoption.

The success or failure of standardization activity is to a large extent determined by the interest displayed in it by the industry. If the industry feels that the time is not proper for standardization, it will undoubtedly display this by a lack of interest in these proceedings, while if it agrees that it is a worth while and timely undertaking, it will in all probability require its approval by an active and interested participation.

Soundproofing of AIRPLANE CABINS

By V. L. CHRESLER
Physicist, Bureau of Standards

FROM the standpoint of passenger comfort one of the greatest needs of the present airplane is that the propeller and engine should be made less noisy so that the cabin should be treated in some manner so that the noise shall not be annoyingly loud inside the cabin. At present the passenger often finds he cannot talk with comfort to anyone seated near him and after a ride of two or three hours, hearing is likely to be temporarily impaired.

The Bureau of Standards was requested by the Aeronautics Branch of the Department of Commerce to determine as far as practicable in the laboratory the best method of soundproofing an airplane cabin. A report of this work may be found in Research Paper No. 63 of the Bureau of Standards Journal of Research. The aim of this article is not to repeat the numerical data given in the above report but to direct some of the general principles involved in soundproofing the sound

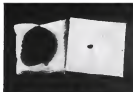
from passing into the cabin and building up to a disagreeable intensity.

Tucker (The Problem of Noise in Civil Aircraft and the Possibilities of its Solution, W. S. Tucker, A.M.I.E.E., January, 1928) has recently called attention to the fact that if we had an airplane cabin which had no sound absorption on the inside, the intensity of the sound on the inside would build up in time to that outside the cabin on a rather low level, a sound insulator the cabin walls were. This at first seems absurd, but he has illustrated it by considering the analogous case of heat transfer. It is well known that if a body is placed in a region of uniform temperature it will finally assume within it the temperature of the surrounding region and that it is impossible to supply sufficient heat insulation to prevent the interior from finally reaching the temperature of the surrounding region.

If we now consider our energy-flow as sound instead of heat it is evident that if there is no loss of sound energy in the cabin (that is, no sound absorption), we must have the same condition as for heat flow, hence the sound intensity inside the cabin will eventually become the same as outside. Fortunately, there is always some absorption in the interior cabin surfaces and the clothing of the passengers adds considerably more, but still more can be done by adding a portion of the inside of the cabin with a very absorbent material. This has been done in some airplanes even when little attempt has been made to prevent the sound from passing into the



Applying thick foam to wall around Bay Area of Boeing Company



Condition of Bay Area after sound was forced through

cabin, and from some improvement is made over a cabin with only a wall of draped fabric.

The most satisfactory results would be expected, however, where the walls are made as soundproof as possible, and then the inside of the cabin made as absorbent as possible.

Before we consider what might be the ideal type of structure for a soundproof cabin, let us consider how sound is transmitted through the walls.

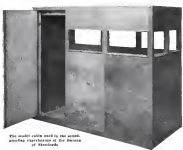
Sound waves in air consist of alternate compressions and rarefactions, and if there are no holes or cracks in the wall to provide an air path along which the waves can pass directly from one side to the other, the only mode of transmission is by setting the wall itself in vibration. The wall yields to the pressure of each sound wave that strikes it (though very slightly), so that it is thrown into a corresponding state of vibration, and the vibrating wall, in turn, sets the air on the other side in motion, just as the diaphragm of a telephone receiver or of a loud speaker sets up sound waves which are propagated through the air to the ear.

It is also desirable at this point to call attention to the fact that only a small amount of the sound energy is transferred from the air in the solid material of the wall in each direction. In the case of a metal surface such as would be used for the outside surface of an airplane cabin about 97 per cent of the sound is reflected and less than 3 per cent transferred by the metal to the air on the other side. This being true, the thought immediately suggests itself, why not build a cabin wall which consists of layers separated by air spaces?

Let us consider two walls, one of two layers and one of three layers. If a single layer allows only 0.03 of the sound incident on it to pass through, then the two layer wall might be expected to transmit 0.01 of 0.03 or 0.0009 of the original sound and the three-layer wall 0.03 of 0.0009 or 0.000027 of the original sound. Unfortunately, these thin layers of metal do not act in that way. They are so flexible that the air seems to act as a link between them and they vibrate together. In no case where numerous thin metal layers of metal transmitted as much sound as a single layer.

For each test it became evident that if two layers were used they should be different in some respect so that they would have different natural periods of vibration and not tend to vibrate together. Also, to help damp out the vibrations and possibly to absorb some of the energy which would be trapped between the two layers, it was found desirable to fill the space between the layers with a highly sound-absorbent material. Several materials such as hair felt, cotton, Balsa Wood and Dry Zero Blanket were tried for this purpose. When about the same thickness of material was used there was not very much difference in the sound transmission although the results were a little better for the hair felt. When weight was taken into consideration, however, it was found that by far the best results were obtained with the Dry Zero Blanket.

Numerous combinations of material were tried with the aim of securing a cabin which would be as quiet inside when the plane is in flight as the interior of a Pullman car when the train is in motion. If there were no weight limitation this would be easy, but it is desirable to have a wall which does not weigh more than one pound to the square foot, and some of the manufacturers are not willing to exceed six-tenths of a pound to the square foot. What appeared to some the correct method of fulfilling the requirements was a combination of metal and quarter-inch fiber board with Dry Zero Blanket between. To increase the absorption in the cabin it also seemed desirable to line at least a portion of the interior of the cabin with absorbent material. This increased the weight somewhat above the minimum weight that was originally decided upon. It also does not give a



The model cabin used in the sound absorption tests of the Bureau of Standards.

method of treatment for the manufacturer who wishes to use fabric for the outside covering. For this reason it has been decided to continue the laboratory work and determine what is the best combination when the outside is fabric.

Co-operative work is under way with several airplane companies. The tests in the laboratory were necessarily made on comparatively small samples and with noises which were radically different from those of an airplane. When built into a plane the results might be somewhat different. Also there are windows, at least one door, and in many cabin layouts which cause some of the sound to reflect off the walls. Anyone of these features may seriously affect the results. In addition to this the engine is rigidly attached to the frame of the airplane, and the vibrations may be transferred directly along this frame to the cabin. The effect of these features was partially determined by a test made on a Navy plane, but to make a better study of them it was considered desirable to build some of the sound insulation features into various planes and then test them. Different types of planes have been chosen for this purpose and it is hoped that the results of these tests will be available in the near future.

MAKING THE Airport PAY FOR ITSELF

The Second of Two Articles on Airport Economics and Conditions Affecting Airport Design in the Future

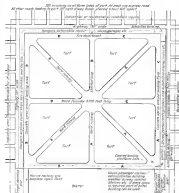
By J. E. BULLARD and AVERY E. LORD

AIR TRANSPORT COMPANIES and sight-seeing and taxi companies offer the largest potential revenue to the airport. Each of these companies must have hangars, oil, gasoline and supplies. If a rental is derived from the land used for the hangars, if the taxi and sight-seeing companies pay the port a percentage of their revenue and if the transport companies pay a tax on the mail express, freight and passengers carried a goodly income is assured, provided there are enough of these companies using the port and that they continue to use it.

However, much of these types of companies is likely to be self-financed. As a company begins to show a profit, it will find it easier and easier to secure as much money as desired. Therefore, if any of them consider that the charges at the public airport are too high,

it is feasible for them to develop their own airports. This means that while all charges made must be high enough to provide an income at least equal to the cost of the service rendered, they must be low enough to make it to the advantage of these companies to use the public port rather than to invest money in their own ports. Since the city does not have to bear the cost of interest on its bond issues that private enterprises must pay on their bonds and other securities in order to attract capital, this seems entirely feasible. However, it requires that the public investment must be recouped in so far as possible to the land and developing the landing area. In other words to those parts of the port where the return is not too dependent upon efficient progressive business management.

Whether or not air transport



Plan showing of a land and airplane airport of 515 acres of land. Included here surrounding land includes left track midway for passenger and freight cars.

companies will continue to use a port under such a system of charges as is listed at Newark (described in the previous article) remains to be seen. There is little reason to think that a new type of system that can be formulated, as principle. The only question is whether or not the rates charged are right. A percentage of the revenue derived by companies using the port for non-aerial purposes appears to be the only fair way to collect money for the use of the field. In the case of schools, taxi and sight-seeing companies, one per cent is probably a fair percentage at the present time. Later, when the business of these concerns increases and prices to the public are reduced, it may be necessary for the airport to reduce the percentage it charges them.

IN THE CASE of the air mail the rate paid the companies is fixed to a greater or less degree by the government. There is a maximum the government will pay, and efforts are now being made to reduce the rate materially. Whether or not the companies can pay a cent a pound for each pound of mail going through each port at which planes stop remains to be seen.

The transport companies believe they cannot. Yet the port certainly ought to derive revenue for the use of the field. It would seem that the only way the matter can be settled with satisfaction to all those concerned is through a conference of airport managers and air transport managers.

In such a conference the air transport companies should recognize that the very best port facilities cannot be provided unless the companies furnish as income to the port. Also that there will not be enough ports to extend the air road as rapidly as desired unless cities can derive a worthwhile income from their ports. Just as soon as air transport companies begin to pay good dividends, taxpayers are not going to continue to waste millions of dollars for airport development and receive no return from the transport companies using the ports.

Airport managers, while trying to get as large a revenue as possible from the transport companies, must be fair in their demands. The charges levied on the transport companies must not be too high, yet they must be high enough to show a reasonable return for the services and privileges rendered the companies. Since at the past the use of airports has, for the most part, been free to the transport companies, and the transport business has been built up on this basis, coming to an agreement that is fair and satisfactory to all concerned is by no means an easy matter.

Flying schools promise a larger and larger income to the ports having facilities for them. These certainly should be at least one trained pilot for every plane in use. As there are no indications that plane production may

be expected to double annually for several years the demand for pilots will require the training of an even increasing number of students. As not all students become finished pilots, the number of students enrolled must be actually larger than the number of additional planes that are going into use.

A fully equipped school not only must have planes and hangars but also shops and instruction rooms for the ground school. This means that revenue is derived from land leases in addition to a percentage of the tuition the schools collect. As the number of students increases the revenue from both these sources becomes much larger for the port. Also as the school becomes larger it is more practical for it to develop its own private port. Therefore the rates collected from schools need to be low enough to make it less expensive to use the public port than to operate a private port.

With as many air companies only too glad to get passengers at airports, it is not likely that even the same prices will find it necessary to sell gas and oil themselves. With gas, oil and grease sold by private companies the port management is relieved of many business details. All that it has to do is to collect the tax per gallon that has been agreed upon. The net result is almost certain to be lower operating costs at the port and greater revenue.

There are two general ways in which the amount collected for each gallon of oil and gasoline sold can be determined. One is to ask both from the oil companies, each company putting in a bid to pay what it considers it can afford on each gallon of gas and oil sold, and guaranteeing a specified minimum revenue per year to the port, for the privilege of selling gasoline, oil and grease at the port. This proves a satisfactory method when the port is new and the city retains the power to turn down all the bids if the revenue they offer does not seem satisfactory.

THE OTHER SERVICE is to determine in advance just how much will be collected on each gallon of gas and oil. Where more time use oil company is to be given a concession in the port this seems the fairest way. Two to three cents on each gallon of gasoline sold and three to five cents on each gallon of oil certainly seems fair. As revenue increases from this source it may be well to discontinue the oil tax and collect only on the gasoline, thus simplifying the bookkeeping, at a higher tax may be collected on the gasoline at the start and some collected on the oil. There are very good reasons to believe that it will not be many years before a two-cent tax on all gasoline sold at the port will yield a revenue at some ports that will more than pay the operating expenses. [This should logically replace the state gasoline tax, since



Above: A view of one side of the Union Oil building at the Eastern Railroad Co. station. A building as in at least should be not built at every airport to provide for industrial growth linked with the surrounding industry district. An idea view of the Union Oil building at the airport is shown in the foreground. The arrangement here has been made so that the city can obtain a revenue if desired.



the aircraft derive no benefit from the highways, to which the proceeds of the state tax are devoted.—Ed.) Should there be cases where satisfactory arrangements cannot be made with an oil company, it is always possible to establish a revolving fund as has been done in Buffalo. This, however, means more work for the management and does not always bring in the net income that has been expected.

The trend at most major airports is away from municipal hangars and toward private hangars. If private capital can be found to build all the hangars required, paying a land rental on the land used, the city is almost certain to secure a larger net revenue than it will if it builds and operates hangars of its own. The simpler the management problem can be made the better.

Avoiding has reached a stage where it seems no more necessary that so many desirable for the city to build public hangars that it build public garages. This was not the case two or three years ago, when there were fewer planes in use. There were perfectly good reasons why the cities that were pioneers in developing airports should erect hangars. These reasons no longer exist. Good reason why the city should not go into hangar building, if it wants to avoid the financial loss. The main reason is that when the city starts in developing airports with these who lease land for the purpose of erecting public hangars or hangars for their own use but from which they hope to derive a little extra revenue by renting space, there are almost certain to be charges of unfair competition with conditions among which tend to reduce the revenue the port should be deriving.

Though the city should not build any hangars if private capital can be persuaded to do the building, there

are two types of buildings which it may be necessary for the city to build. One of these is the passenger terminal building. The other is an exhibition hall.

A terminal building is absolutely essential for passenger business. All the planes of all the lines using the port should discharge and take on passengers under cover at the terminal building. It should serve the same purpose as air transportation that a union station serves in railroad transportation.

If the air transport companies can be persuaded upon to organize a terminal building company with provisions

in the charter making it obligatory to take in, and give a place on the directors, to any new company the city allows to use the port, this will usually prove to be the most satisfactory solution. If an aviation by private capital is going to be from it all aviation companies except those who took part in erecting it, it is better that the city erect the terminal building itself.

In case the city builds the structure it should make charges for its use to every company using it. The offices of the airport manager and his staff, the control room, the radio room, the weather bureau office and the like should all be housed in this building.

WHETHER the city builds the building itself or not, a revenue should be derived from it. If built by private capital there is the best rent that can be collected. If the city builds it, rentals should be charged that will result in a total equal to the land rental, plus a sum that will cover all operating expenses of the building. Interest on the investment, depreciation and the like. In other words the building should show a net revenue to the city.

In such a building there are restaurants, check rooms, cab and bus offices, more and other concessions that can be leased and if a separate hotel building is not erected some hotel accommodations can be incorporated in the same building. Either private capital or the city should be able to make a profit on the building after business develops at the port to the degree it is reasonable to believe it should. Of course in determining the rental and concession charges estimates should be made over a period of five or ten years so that the rental charges will not be prohibitive and keep business away, rather than attract it.



A section of the Union Oil building at the Eastern Railroad Co. station, showing those occupied by private capital. This section has been built to be one of the best examples in the South.

The exhibition building is new to airports, with a few exceptions, but a structure that undoubtedly will be constructed at nearly all major airports in the future. It is presently needed for the purpose of holding airplane shows, and just as most cities hold an automobile show each year it is reasonable to expect that they will also hold airplane shows in the not distant future. It may well be linked now to the terminal building with an entrance for airplanes from the landing field and for the public from the street. With planes increasing in size, it is no longer practical to hold shows at which are exhibited planes of all the sizes and types being built unless an exhibition hall is provided at the port.

In addition to surplus shows these halls provide excellent facilities for automobile shows, conventions, athletic events, various kinds of exhibitions and for other purposes. If the building is erected by a private company, that company is likely to find it a good investment. If the city erects it and leases it to a private company the problem of deriving a return from it is solved. If the city erects it and undertakes the management of it, the return is derived at least in a form that is hoped for because surplus value is an measure of intensity of entrepreneurship and an argument that it is of an entirely different type from that required by a successful entrepreneur.

PUTTING THE BALANCE under expert management, preferably under the management of a well-known private company that has the money available to do the advertising, maintain the publicity and do the other promotional work necessary to attract a steady stream of events, and it can be made a good source of indirect revenue through the direct revenue from it may not be large. Every event will attract both motorists and fans, and from these a revenue can be derived through sales and parking space. The post will become better and better known and business at it will increase. Therefore, the exhibition building will be directly used commercially and not become a white elephant.

A source of revenue, not given much attention is the post but which, especially if an exhibition building is erected, promises much for the future is automobile parking. On a Sunday at Starnberg Airport-St. Louis, 3800 was made taking passengers on short flights and \$12,000 taken in late evening automobiles.

More and more automobile parking space will be required at all airports and the city should to develop a new port should give this source of revenue careful monitoring and reserve ample areas of ground. Not only is outdoor parking space necessary but indoor parking space is the desirable. People who drive to the port to take an air trip of a day or so do not want to leave their cars out of doors. If there is a garage at the port, they can park in this building. If this garage is equipped for all kinds of repairing, washing, painting and the like, the car owner can have any needed work done while he is waiting. This convenience that is likely to become popular, especially because airports are so far away from the centers of the cities they serve.

every airport. If the Sky Harbor project proves as successful in operation as is anticipated, here is another undertaking that can be turned over to private capital at the city's request.

WHERE SCHOOLS ARE CONNECTED, IN VIEW of the increasing desire on the part of women to learn to fly, it would seem wise for either the city or the school to provide a women's club house for the co-eds of the flying schools. If there are not enough of these co-eds then it can be made a club house for all women and perhaps the women's clubs in the city can get together, raise the money to erect the building and organize a women's flying club with dues that will pay for the upkeep of the building and the land rental.

Usually, after all the buildings enumerated have been surveyed there is still vacant space around the margin of the field that must be turned in. Peases cost money. The good way is to let the owner pay for itself to erect a good building. Another way is to let the owner build the entrance to these should be from outside the field and harness of sufficient light and strength built on front of them to prevent people from crowding into the field when anything especially exciting is taking place. The entrance should be made of a material that will last and when they are struck. Later when the space is needed for permanent structures they can be moved to new locations or perhaps placed on the roofs of the buildings. The revenue derived from selling seats on the stands depends of course upon what takes place in the arena. It is possible at any point to make the present work whole.

Primarily cut and planes have also become sufficiently numerous in most parts of the country to provide much revenue to the airport. Their number, however, is steadily growing and within a few years they should be an important source of revenue. It is found in regard to the planes that the charges for landing are \$100 per dollar if the aircraft is spent at the port, but to waive the charge if oil, gasoline, or baggage space is bought. In other words there is a minimum that must be paid if money is spent in no other way at the port. It is likely, however, that the planes will be used for other purposes, but that no plane will be permitted to be parked overnight in a hangar, thus keeping the landing field entirely free of planes that are not landing, taking off, or being serviced with oil and gas and providing business for the airport that will require the building of more hangars, runways, etc.

There is an type of private place owner, however, that has to be barred from public air ports. He is the person who uses his place for the purpose of carrying passengers on short flights from any place where he can find a field and good business. If he is permitted to use the public port he uses it only when business is rising, and when things get a little rough he flies on to some other place. He is not a public place owner, and he is not the kind of person who has money invested in buildings at the port to permit such a place owner to visit the port and use it for commercial purposes. He has to be restricted to merely loading and taking off, buying gas and oil and the like, and in some cases it may be wise to bar him from even these privileges. It depends much upon whether he is using the facilities for the purpose of competing with those who are established at the port. Every protection within reason has to be given to these

A STATISTICAL PICTURE OF THE *Air Mail*

An Analysis of Recent Operations in the United States

THE STORY of the domestic air mail in this country commands interest even when the through the supposedly formidable medium of statistics. In fact, the picture that may be seen with greater detail and at the same time with broader perspective than other government efforts. The financial standing of the air mail at the present time deserves particularly close attention because of the increasingly important civil aviation business which have been going on for some months in the country. The Civil Aeronautics Administration, the Federal Aviation Administration, and the Federal Contracting Corporation. Public as well as professional interest has been drawn to the air mail situation by

these conferences and, as air mail is one of the most vital departments of the country's economical structure, those inside the industry are particularly alert to the events at Washington. The outcome is likely to mark a new era in the country's air mail history.

To present the record of the mail services clearly and to indicate the important trends therein, the accompanying table and charts have been prepared from reports issued monthly by the Post Office Department for 1927, 1928 and through August 31, 1929. Figures for 1926 and the complete monthly figures for 1927 were not available. The survey therefore uses the 1927 totals for a starting point.

Case	Issue	Disposition	Total for Year 1983			Reversion for Year 1984
			As Filed	Dismissed	Compromised	
1	Eastern-New York	Dismissed	92,159	28,481	669,148	80,757
2	Cheney-Rose	Dismissed	198,099	28,474	18,261	2,000
3	Cheney-Allen Inc.	Dismissed	429,422	109,251	3,561,341	685,939
4	Rich Lake City-Grand	Dismissed	429,148	385,558	100,499	448
5	Rich Lake City-Grand	Dismissed	39,916	10,772	37,965	164
6	Verona-Grand	Dismissed	12,464	1,224	1,861	100
7	Beaver-Cheney	Dismissed	500,130	18,791	1,523,111	314,336
8	Beaver Lake-Anne (a) (b)	Dismissed	147,840	103,866	214,349	693,434
9	Cheney-Massachusetts (a)	Dismissed	100,141	41,498	1,000	1,100
10	Cheney-Cheney (a)	Dismissed	18,490	9,125	16,719	799
11	Cheney-Pauls (a)	Dismissed	149,127	16,793	143,532	314,835
12	Cheney-Cheney (a)	Dismissed	1,000,000	177,151	1,000,000	4,000,000
13	Cheney-Cheney (a)	Dismissed	1,000,000	286,112	1,000,000	4,000,000
14	New York-Cheney (a)	Dismissed	2,000	100	340	12
15	Beaver-Cheney	Dismissed	1,000,000	100	340	12
16	Beaver-Cheney	Dismissed	1,000,000	100	340	12
17	Beaver-Cheney	Dismissed	1,000,000	100	340	12
18	Beaver-Cheney	Dismissed	1,000,000	100	340	12
19	Beaver-Cheney	Dismissed	1,000,000	100	340	12
20	Beaver-Cheney	Dismissed	1,000,000	100	340	12
21	Beaver-Cheney	Dismissed	1,000,000	100	340	12
22	Beaver-Cheney	Dismissed	1,000,000	100	340	12
23	Beaver-Cheney	Dismissed	1,000,000	100	340	12
24	Beaver-Cheney	Dismissed	1,000,000	100	340	12
25	Beaver-Cheney	Dismissed	1,000,000	100	340	12
26	Beaver-Cheney	Dismissed	1,000,000	100	340	12
27	Beaver-Cheney	Dismissed	1,000,000	100	340	12
28	Beaver-Cheney	Dismissed	1,000,000	100	340	12
29	Beaver-Cheney	Dismissed	1,000,000	100	340	12
30	Beaver-Cheney	Dismissed	1,000,000	100	340	12
31	Beaver-Cheney	Dismissed	1,000,000	100	340	12
32	Beaver-Cheney	Dismissed	1,000,000	100	340	12
33	Beaver-Cheney	Dismissed	1,000,000	100	340	12
34	Beaver-Cheney	Dismissed	1,000,000	100	340	12
35	Beaver-Cheney	Dismissed	1,000,000	100	340	12
36	Beaver-Cheney	Dismissed	1,000,000	100	340	12
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41	Beaver-Cheney	Dismissed	1,000,000	100	340	12
42	Beaver-Cheney	Dismissed	1,000,000	100	340	12
43	Beaver-Cheney	Dismissed	1,000,000	100	340	12
44	Beaver-Cheney	Dismissed	1,000,000	100	340	12
45	Beaver-Cheney	Dismissed	1,000,000	100	340	12
46	Beaver-Cheney	Dismissed	1,000,000	100	340	12
47	Beaver-Cheney	Dismissed	1,000,000	100	340	12
48	Beaver-Cheney	Dismissed	1,000,000	100	340	12
49	Beaver-Cheney	Dismissed	1,000,000	100	340	12
50	Beaver-Cheney	Dismissed	1,000,000	100	340	12

point). The first three sections of the table present the totals for 1927, 1928 and 1929 and the rest of the table presents the record by quarter. The subtotals show rates down, pounds of mail carried, amount of compensation revenue per mile and, in the case of the water totals, the revenue per pound for companies. The two charts show the curves for series representative companies in regard to variations of compensation per mile flown and variations of pounds carried per schedule trip.

Since the method, or rate, of paying the contractors as the factor is the main issue in the Washington hearings the reverse aspects of these statistics assume particular importance.

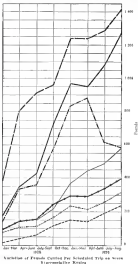
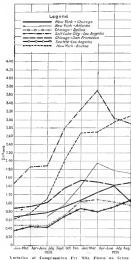
Discrepancies in the amount of compensation among the various contractors are easily traced in the accompanying table and it is obvious that the older, poorer operators are receiving higher rates of pay than the more recent ones.

This downward trend is to the liking of the government, of course, and the authorities apparently contend that some of the poorer ones should scale down their compensation to something comparable to what the more

recent arrivals in the air mail field are receiving. There, obviously is some inconsistency at present.

The total number of miles flown in 1927 was 1,623,214. During 1928 two and a half times as many miles were flown. Using the mileage figure through August 31 as representing two thirds of what the total will be for this year, we find that about 12,350,311 mi will be flown in 1929, an increase of about one third over the 1928 total. Eight new routes were added during 1928 and so far this year there have been but three additions (one being the shuttle service between Chicago Municipal Airport and Grant Park) and two cancellations (the mail services on the Saint Louis).

Poundage has jumped ahead somewhat faster. During 1928 the poundage carried was a little more than three times as large as in 1927. Again assuming the figure through August 31, 1929, as representing two thirds of the probable total for this year, we get a total theoretical poundage for 1929 of 67,635,435—nearly not quite double that for 1928. With the help of the actual Christmas hours in traffic, this theoretical figure probably will be found a bit conservative. It should be borne in



Com.	Route	Total for Year 1928					Total for Year 1929 (to Aug. 31, 1929)				
		Mi.	Pounds	Comp.	Revenue	per Mile	Mi.	Pounds	Comp.	Revenue	per Mile
1.	Between New York	91,140	11,341	\$144.14	\$1.05	\$1.05	98,270	14,921	\$232.61	\$2.31	\$2.31
2.	Chicago-Dallas	102,611	15,499	\$142.76	1.40	1.34	105,441	16,095	\$161.70	1.51	1.39
3.	Chicago-Dallas	642,614	9,000	\$149.64	1.40	1.34	642,614	9,000	\$149.64	1.40	1.34
4.	Salt Lake City-Los Angeles	42,643	26,512	\$154.14	1.34	1.30	44,107	40,133	\$140.00	1.30	1.30
5.	Salt Lake City-Peak	12,611	11,100	\$152.00	1.40	1.34	14,101	12,600	\$140.00	1.30	1.30
6.	Seattle-Chicago	39,348	1,100	1.00	1.00	1.00	39,348	1,100	1.00	1.00	1.00
7.	Seattle-Chicago	11,240	1,100	\$149.64	1.40	1.34	11,240	1,100	\$149.64	1.40	1.34
8.	San Francisco	4,614	112,111	\$149.64	1.40	1.34	4,614	112,111	\$149.64	1.40	1.34
9.	Chicago-Minneapolis	161,170	17,100	\$150.54	1.40	1.34	161,170	17,100	\$150.54	1.40	1.34
10.	Chicago-Pittsburgh	88,261	48,117	\$150.54	1.40	1.34	88,261	48,117	\$150.54	1.40	1.34
11.	Chicago-Pittsburgh	10,101	1,100	\$150.54	1.40	1.34	10,101	1,100	\$150.54	1.40	1.34
12.	Chicago-Louisville	11,101	20,111	\$150.54	1.40	1.34	11,101	20,111	\$150.54	1.40	1.34
13.	New York-Chicago	1,442,111	10,111	\$150.54	1.40	1.34	1,442,111	10,111	\$150.54	1.40	1.34
14.	Chicago-Pittsburgh	1,111	1,100	\$150.54	1.40	1.34	1,111	1,100	\$150.54	1.40	1.34
15.	New York-Chicago	10,111	1,100	\$150.54	1.40	1.34	10,111	1,100	\$150.54	1.40	1.34
16.	Buffalo-Chicago	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
17.	Buffalo-Chicago	10,111	1,100	\$150.54	1.40	1.34	10,111	1,100	\$150.54	1.40	1.34
18.	Seattle-Chicago	10,111	1,100	\$150.54	1.40	1.34	10,111	1,100	\$150.54	1.40	1.34
19.	Chicago-New Orleans	10,111	1,100	\$150.54	1.40	1.34	10,111	1,100	\$150.54	1.40	1.34
20.	Chicago-New Orleans	10,111	1,100	\$150.54	1.40	1.34	10,111	1,100	\$150.54	1.40	1.34
21.	Albany-Salt Lake City	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
22.	New York-Chicago	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
23.	New York-Chicago	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
24.	New York-Chicago	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
25.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
26.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
27.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
28.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
29.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
30.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
31.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
32.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
33.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
34.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
35.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
36.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
37.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
38.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
39.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
40.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
41.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
42.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
43.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
44.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
45.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
46.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
47.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
48.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
49.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
50.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
51.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
52.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
53.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
54.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
55.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
56.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
57.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
58.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
59.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
60.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
61.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
62.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
63.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
64.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
65.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
66.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
67.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
68.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
69.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
70.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
71.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
72.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
73.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
74.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
75.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
76.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
77.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
78.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
79.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
80.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
81.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
82.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
83.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
84.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
85.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
86.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
87.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
88.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
89.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
90.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
91.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
92.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
93.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
94.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
95.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
96.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
97.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
98.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
99.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
100.	Chicago-New Orleans	11,111	1,100	\$150.54	1.40	1.34	11,111	1,100	\$150.54	1.40	1.34
Total		1,212,794	1,344,665	\$2,301,201	1.81	1.74	1,212,794	1,344,665	\$2,301,201	1.81	1.74

because the volume of mail and the compensation have increased more rapidly than the index down.

The average revenue per pound went down \$2.01 in 1958 and another \$0.07 through August of this year. This is due to two causes: First the slight variations mentioned in the sliding scale of payment under which three of the routes (New York-Chicago, Chicago-San Francisco and Seattle-Los Angeles) are operated while the others remain constant, and, second, the aforementioned fact that the newer contracts involve smaller rates of pay than the older ones. These two influences have a direct effect on this downward trend of the compensation earned by each pound of mail.

So much for the yearly total tables. The quarterly totals contain further interesting data, showing as they do the steady increase in the three areas of package flow, package carried and compensation paid. While individual companies during these quarters were having their ups and downs, the average for the whole industry showed a distinct upward trend. Compensation in these quarterly trends is the least upward according to the third quarter of last year when the low mail rate went into effect. Compared to the preceding quarter, the index flown is less than a half, but postage by weight has fallen five-fifths and compensation by rate two-thirds.

Taking the months of July and August of this year as representing two thirds of that quarter, we may derive theoretical totals for that quarter as follows: Mailage, 3,853,519; package, 2,620,761; and compensation, \$3,915,530. This indicates that the upward trend of the preceding periods continued through this one and that the growth of the air mail has by no means been checked by any unfavorable influences. It represents a tremendous gain over the same period the year before when the low mail rate came into effect.

It might be well to state here that this general upward trend shown by the figures in quarterly loads does not hold in the monthly reports (not shown here). For instance, there was a drop in February from the total package reported for January. In March it went up

and in April dropped back again. Through May, June, July and August there was an increase each month over the preceding month. In 1958, the package movement through January, February and March. It dropped in April, soared in May and continued through June and July to the big month of August.

Revenue per rate increased in each quarter through 1958 but fell off during the first two quarters of this year. This was because the volume increased at a greater rate than the package and the package, postage and compensation did continue to increase. The opposite combined obtained during 1958 when the package increased more faster than the revenue. This figure in the yearly total for 1959 (through August) shows a gain over 1958 because the quarterly decrease has not been as low as most of the quarterly figures obtained last year.

There seems to be little indication of seasonal weather influences on these quarterly trends. There apparently was a slowing up during the first quarter of this year the worst of the winter period, since the revenues were not as large as had been made in the preceding periods. The stride was picked up again in the second and third quarters, however.

Narrowing our analysis down to the records of individual companies, we discover considerable variation from the general trend of the companies taken as a group. Although the upward movement in matters of package, postage and compensation have progressed steadily for the companies as a whole, a few individuals have been leaving the upward trend. The upward trend is not all these trends here as the table shows them without need of further comment. However, a study of what happened in the winter season of 1958-1959 looks interesting because of the seasonal and holiday factors involved.

The fourth quarter of 1958 was the peak for all the companies for that year and some of the operators had experienced a steady increase throughout the year. During the first quarter of this year, however, the picture was changed and twelve companies flew less

Date	Route	July 1, 1958—December 31, 1958				October 1, 1958—December 31, 1958			
		Index	Rate	Package	Revenue	Index	Rate	Package	Revenue
1	Boaton-New York	11,426	17,452	633,235	52,071	36,276	23,437	338,922	14,476
2	Chicago-Los Angeles	20,900	29,953	1,000,761	1,200	32,429	26,548	561,400	4,499
3	Chicago-Dallas	20,900	29,953	1,000,761	1,200	32,429	26,548	561,400	4,499
4	Chicago-Lake City-Los Angeles	101,000	85,200	1,000,761	1,200	140,000	140,000	6,000,000	3,344
5	Chicago-Lake City-Penn.	101,000	85,200	1,000,761	1,200	140,000	140,000	6,000,000	3,344
6	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
7	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
8	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
9	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
10	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
11	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
12	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
13	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
14	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
15	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
16	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
17	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
18	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
19	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
20	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
21	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
22	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
23	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
24	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
25	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
26	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
27	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
28	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
29	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
30	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
31	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
32	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
33	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
34	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
35	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
36	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
37	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
38	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
39	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
40	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
41	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
42	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
43	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
44	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
45	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
46	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
47	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
48	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
49	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
50	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
51	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
52	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
53	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
54	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
55	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
56	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
57	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
58	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
59	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
60	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
61	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
62	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
63	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
64	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
65	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
66	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
67	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
68	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
69	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
70	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
71	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
72	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
73	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
74	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
75	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
76	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
77	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
78	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
79	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
80	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
81	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
82	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
83	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
84	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
85	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
86	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
87	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
88	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
89	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
90	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
91	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
92	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
93	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
94	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
95	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
96	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
97	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
98	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
99	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
100	Chicago-Chicago	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200

January 1, 1958—March 31, 1958						April 1, 1958—June 30, 1958					
Case	Route	Index			Revenue	Index			Revenue		
		Index	Rate	Package		Index	Rate	Package			
1	Boaton-New York	11,426	17,452	633,235	52,071	36,276	23,437	338,922	14,476		
2	Chicago-Los Angeles	20,900	29,953	1,000,761	1,200	32,429	26,548	561,400	4,499		
3	Chicago-Dallas	20,900	29,953	1,000,761	1,200	32,429	26,548	561,400	4,499		
4	Chicago-Lake City-Los Angeles	1			1						
5	Boaton-Lake City-Pace	10,200	80,001	175,427	13	91,400	32,701	111,117	1,001		
6	Boaton-Chicago										
7	Chicago-Chicago										
8	Boaton-Chicago	101,200	53,010	180,702	805	100,703	51,010	170,100	911		
9	Chicago-Chicago	100,000	50,000	180,000	800	100,000	50,000	180,000	900		
10	Chicago-Pittsburgh	77,704	75,111	111,000	3,43	100,000	74,511	100,000	11		
11	Chicago-Pittsburgh	100,000	50,000	180,000	800	100,000	50,000	180,000	900		
12	Chicago-Pittsburgh	100,000	50,000	180,000	800	100,000	50,000	180,000	900		
13	New York-Chicago	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
14	Chicago-New York	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
15	Chicago-New York	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
16	Pittsburgh-Chicago	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
17	Dallas-Chicago	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
18	Chicago-Dallas	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
19	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
20	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
21	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
22	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
23	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
24	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
25	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
26	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
27	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
28	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
29	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
30	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		
31	Chicago-Lake City	100,000	100,000	100,000	100	100,000	100,000	100,000	100		



SIDE SLIPS

By
Robert R. Qiborn

WE WANNERS over to Michel Field the first day of the official testing of the new interest in the Guggenheim Safe Aircraft Competition. A large crowd was on hand and editors and pilots were standing around the groups talking excitedly. We hurried up to the largest group, comprising a number of prominent celebrities, eager to hear the discussion on some of the entries. We heard:

"I tried all day yesterday to get rid of my American Tel and Tel but it dropped, throwing points before the net could get in."

"...and I used in that 'three back for four hours dropping com' in the air but the operator said there were a thousand calls on the waiting list for my brother's office."

"...but they all had the same old song—'Sweetie, I'd like to lead you the money, but every cent I could get told of it is in those covering my savings.'"

We think that the winning ship in the Guggenheim Competition should be looked over very carefully in case it has some device which might be attached to the stock market—fast, if not remember recently one of the requirements is that successful designs appear shall not come in those meeting the competition rules.

Aeronauts who have to operate on the characteristics of wings having infinite gas will probably be involved in making the operation of the new Dwyer test, as discovered in a New York paper by F. F. of Dwyer, N. Y.

"The Do-X maneuvers 150 feet from tip to tail. Its wings are 100 feet thick, and three feet from wing tip to wing tip."

...

Mr. H. I. Phillips is responsible for the following excellent comments appearing in the New York Sun on the German Dwyer test: "The Dwyer Dwyer Do-X has made a flight with 350 passengers and what tourists live is dead of it is the news that they were a big success." "There will, of course, be a popular song calling the Dwyer the 'Do-do-do-do-X'."

"Midwest Power Resources to 100 Feet Underwater"

So reads the headline of an item found by an anonymous contributor to the St. Louis Star.

Well, we're surprised to see some ships get off at all.

...

There was an item in the papers a week or so ago, about a Navy post-class jumper who jumped over Narragansett Bay and a rubber boat in the fall and after landing pulled over to a restaurant which took him in hand.

Someone with a remarkable sense of humor thought the question which one fish are most like someone's appearance thought. "Do you enjoy in appearance or someone's work?" and we should like to have him present to watch his expression as he read that news item.

...

From E. J. von H. of Chicago, Ill. comes a clipping from the New York Sun. The item is a description of this year's air show at Cleveland and lists among the events of the day: "The airplane carrier *Saratoga* moved along the lake. Mr. E. J. von H. suggests that an added feature of next year's show could be a little close formation work with the *Saratoga* but we'd wish rather see *Leontine*. Doubtless try an outside loop with either one of them.

...

Capt. F. C. A. reports that the California fleet are now working on the possibility of changing tail wheels to a slight, as a novelty ride from their dual, reverse of changing landing gear, extending motors, replacing others in flight.

...

Mr. J. D. P. of Brooklyn, New York, writes to the *Aviation* that an airplane apparently designed after the specifications of the "Traveler" no-pilot, all-compass airplane described in *Aviation* some time ago. "An airplane convertible from a landplane to an airplane and which will serve as a fighter or bomber for reconnaissance, as an ambulance, for carrying passengers or for long range travel, is the basic structure of an English airplane factory. The model—... is fitted with either a *Proper 'Line'* series V engine, having a compression ratio of 24 to 1, or a *Super 'Line'* series XI with a 6 to 1 compression ratio, or with the new *Rolls-Royce 'P'XII'*, all of which are water-cooled engines. If an air-cooled engine is preferred, the *Pratt & Whitney 'J'* series will be used. The normal fuel capacity is 120 gallons of gasoline, and the amount of oil which can be carried is 30 gallons. It has a range at cruising speed of about 9,700 miles."

Our testing agents report that this great versatility is made possible by a portable electric store which this ship is carrying for the first time in history.

...

Mr. J. C. of Oakland, Cal., wrote us a note clipped from the *San Francisco Chronicle* which shows the changes some pilots will take, and we think the reader should be referred to the Department of Commerce:

—The take-off was extremely hazardous, so it was necessary to fly almost directly across the field over the face of the wind."

...

The news tells of a Chicago woman who has just completed an 8,000-mile trip, by airplane, during which she purchased goods and accessories in Hollywood and New York. We wonder if the man who has been looking for an airplane to use in the last few years ever thought that the airplane would ever have wings a *water shopping* stage?

...

Apparently some attempts are being made to develop mechanical devices to control an airplane pilot, but that they are still far from perfect is evident from a clipping sent us by H. J. D. of Wichita, Kansas:

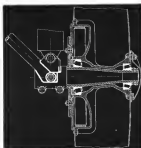
From a New York Oct. 17—Dwight Kimmel aviation enthusiast here got "the thrill that comes over in a lifetime" when he figured in an airplane rescue. "The idea of the plane in which Kimmel was riding developed trouble and the pilot decided to crash the engine."

"HAPPY LANDINGS!"



What man is there with more than a few hours of air-experience who has not heard that oft-repeated toast—"Happy Landings!" A relic of World War flying days whence it originated, the expression then was alive with meaning...for planes were far from perfect, and good landings were often merely the result of luck and skillful handling.

When the loads are all radial, all thrust, or a combination of both—any of which conditions may be encountered on every landing field—they are efficiently handled by Timken—the one bearing that does all things well. "Happy Landings" takes on a new meaning with planes "Timken Bearing Equipped".



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The manufacturing of the production of Cheney-Cast Cylinders is a matter of time and money. The Cheney-Cast Cylinders are made of cast iron and are very durable and can be used in many cases.

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AEROLANDING STRUTS

Many kinds of aviation as well as other kinds of these landing struts are available. They are made of steel and are very strong. They are also very light and are easy to install.

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For complete information, wire or write at once to the Curtiss-Wright branch shown in the last column, or to Dept. 3, 27 West 57th Street, New York City. Your message will receive immediate attention.

ANNOUNCEMENT

Curtiss-Wright Flying Service is now a part of Curtiss-Wright Corporation, the recently announced consolidation of Curtiss and Wright interests. Hereafter, Curtiss-Wright Flying Service will operate under the name of Curtiss-Wright Flying Service—division of Curtiss-Wright Corporation.

CURTISS-WRIGHT

DIVISION OF CURTISS-

70 USED PLANES

Name of Plane	Type	Open or Closed	No. of Pass.	Plane No.	Type of Engine	Plane and Engine Type	Price	Location
Copiers	Mon.	Closed	2 to 10	1000	Wright	1000	10,000	Buffalo
"	"	"	"	1001	"	"	10,001	"
"	"	"	"	1002	"	"	10,002	"
"	"	"	"	1003	"	"	10,003	"
"	"	"	"	1004	"	"	10,004	"
"	"	"	"	1005	"	"	10,005	"
"	"	"	"	1006	"	"	10,006	"
"	"	"	"	1007	"	"	10,007	"
"	"	"	"	1008	"	"	10,008	"
"	"	"	"	1009	"	"	10,009	"
"	"	"	"	1010	"	"	10,010	"
"	"	"	"	1011	"	"	10,011	"
"	"	"	"	1012	"	"	10,012	"
"	"	"	"	1013	"	"	10,013	"
"	"	"	"	1014	"	"	10,014	"
"	"	"	"	1015	"	"	10,015	"
"	"	"	"	1016	"	"	10,016	"
"	"	"	"	1017	"	"	10,017	"
"	"	"	"	1018	"	"	10,018	"
"	"	"	"	1019	"	"	10,019	"
"	"	"	"	1020	"	"	10,020	"
"	"	"	"	1021	"	"	10,021	"
"	"	"	"	1022	"	"	10,022	"
"	"	"	"	1023	"	"	10,023	"
"	"	"	"	1024	"	"	10,024	"
"	"	"	"	1025	"	"	10,025	"
"	"	"	"	1026	"	"	10,026	"
"	"	"	"	1027	"	"	10,027	"
"	"	"	"	1028	"	"	10,028	"
"	"	"	"	1029	"	"	10,029	"
"	"	"	"	1030	"	"	10,030	"
"	"	"	"	1031	"	"	10,031	"
"	"	"	"	1032	"	"	10,032	"
"	"	"	"	1033	"	"	10,033	"
"	"	"	"	1034	"	"	10,034	"
"	"	"	"	1035	"	"	10,035	"
"	"	"	"	1036	"	"	10,036	"
"	"	"	"	1037	"	"	10,037	"
"	"	"	"	1038	"	"	10,038	"
"	"	"	"	1039	"	"	10,039	"
"	"	"	"	1040	"	"	10,040	"
"	"	"	"	1041	"	"	10,041	"
"	"	"	"	1042	"	"	10,042	"
"	"	"	"	1043	"	"	10,043	"
"	"	"	"	1044	"	"	10,044	"
"	"	"	"	1045	"	"	10,045	"
"	"	"	"	1046	"	"	10,046	"
"	"	"	"	1047	"	"	10,047	"
"	"	"	"	1048	"	"	10,048	"
"	"	"	"	1049	"	"	10,049	"
"	"	"	"	1050	"	"	10,050	"
"	"	"	"	1051	"	"	10,051	"
"	"	"	"	1052	"	"	10,052	"
"	"	"	"	1053	"	"	10,053	"
"	"	"	"	1054	"	"	10,054	"
"	"	"	"	1055	"	"	10,055	"
"	"	"	"	1056	"	"	10,056	"
"	"	"	"	1057	"	"	10,057	"
"	"	"	"	1058	"	"	10,058	"
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"	"	"	"	1061	"	"	10,061	"
"	"	"	"	1062	"	"	10,062	"
"	"	"	"	1063	"	"	10,063	"
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"	"	"	"	1065	"	"	10,065	"
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"	"	"	"	1078	"	"	10,078	"
"	"	"	"	1079	"	"	10,079	"
"	"	"	"	1080	"	"	10,080	"
"	"	"	"	1081	"	"	10,081	"
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"	"	"	"	1097	"	"	10,097	"
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"	"	"	"	1111	"	"	10,111	"
"	"	"	"	1112	"	"	10,112	"
"	"	"	"	1113	"	"	10,113	"
"	"	"	"	1114	"	"	10,114	"
"	"	"	"	1115	"	"	10,115	"
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"	"	"	"	1120	"	"	10,120	"
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"	"	"	"	1205	"	"	10,205	"
"	"	"	"	1206	"	"	10,206	"
"	"	"	"	1207	"	"	10,207	"
"	"	"	"	12				

"PILOT MY OWN PLANE? WELL—AND WHY NOT?"



MORE than eight thousand men and women are licensed to fly. But nearly half a million people buy and read the magazines such as this, devoted to the air!

To the four hundred and ninety-two thousand people who are not yet pilots, Wright, here and now makes the suggestion that they start!

Planes of today are capable. Wright "Whirlwinds" and Wright "Cyclones" are strong, dependable engines; pilots are skillful; landing fields daily increase in number and are constantly bettered in quality; while ground service equal to the best garages is flourishing at all good airports.

And most important of all, costs are coming down—(and never forget that it has been cost, not danger, that has limited public participation in airplane activities).

So to our non-flying readers of aviation publications, Wright suggests that they join the First Flight Club now—with the firm conviction that a few years hence will see them piloting a plane of their own!

Off the ground and go!



WRIGHT
AERONAUTICAL CORPORATION
PATERSON, NEW JERSEY

